

WHAT IS CLAIMED IS:

1. A method of determining a work function of a metal, comprising the steps of:  
forming a metal-on-silicon (MS) Schottky diode with a metal having a work function to be determined forming contacts of the MS Schottky diode;  
measuring a capacitance-voltage curve of the MS Schottky diode; and  
determining the work function of the metal based on the measured capacitance-voltage curve.
2. The method of claim 1, wherein the step of forming the MS Schottky diode includes depositing the metal on a silicon substrate in accordance with a mask on the silicon substrate.
3. The method of claim 2, wherein the mask is a shadow mask.
4. The method of claim 2, wherein a first one of the contacts is at least ten times smaller in size than a second one of the contacts.
5. The method of claim 4, wherein the step of measuring a capacitance-voltage curve includes contacting the first and second contacts with respective probes of an LCR meter.
6. The method of claim 5, wherein the first and second contacts are on the same side of the silicon substrate.
7. The method of claim 6, wherein the first contact is at least 100 times smaller in size than the second contact.
8. The method of claim 7, wherein the first contact is at least 800 times smaller in size than the second contact.
9. The method of claim 2, wherein a plurality of the contacts are actual capacitor contacts and another one of the contacts is a front contact.
10. The method of claim 9, wherein the actual capacitor contacts are different sizes from one another.

11. The method of claim 10, wherein each of the actual capacitor contacts have a size that is at least 100 times smaller than the front contact.

12. A method of forming Schottky diodes for determining work function of a metal, comprising the steps of:

positioning a shadow mask having holes on a silicon substrate; and

depositing the metal through holes in the shadow mask into the silicon substrate, the holes including at least a first hole with a first cross-sectional area and a second hole with a second cross-sectional area that is at least 100 times greater than the first cross-sectional area.

13. The method of claim 12, wherein the holes in the shadow mask are in sets of a repeating pattern.

14. The method of claim 13, wherein each pattern includes actual capacitor holes and a front contact hole, the front contact hole being the second hole, and the actual capacitor holes being the first holes.

15. The method of claim 14, wherein the actual capacitor holes within each one of the patterns are different sizes from one another.

16. The method of claim 15, wherein each of the actual capacitor holes within each pattern is at least 100 times smaller than the front contact holes.

17. The method of claim 16, wherein the front contact hole is approximately  $.25 \text{ in}^2$ .

18. The method of claim 17, wherein a first one of the actual capacitor holes is approximately .02 in in diameter, a second one of the actual capacitor holes is approximately .015 in in diameter, and a third one of the actual capacitor holes is approximately .010 in in diameter.